Appendix E
MAINTENANCE STANDARDS

Maintenance Standards

Park usage and maintenance are directly related to each other. An increase in park usage demands greater maintenance work while well-maintained parks attract more users. Given this interdependence between usage and maintenance, a maintenance and management plan is required to ensure that an increase in park usage is supported by an increase in the quality and quantity of park maintenance. The *Maintenance Plan for the Muddy River Parks of the Emerald Necklace, Muddy Rivers Restoration Project* is referenced, herein, to establish a framework for parks and open space maintenance standards based on the following parameters:

- Calculating square foot maintenance cost;
- Articulating higher maintenance standards; and
- Establishing performance standards based on work activities.

Square Foot Maintenance Cost

It is complex to measure and manage park maintenance work without defining the specific work items or procedures and there are many methods for measuring maintenance work, this RMP uses the analysis in the Muddy River Restoration Project and applies it to Chestnut Hill Reservation.

In 2001 when The *Maintenance Plan for the Muddy River Parks of the Emerald Necklace, Muddy Rivers Restoration Project* was prepared the following cost per square foot was estimated at $0.8/square foot for the Arnold Arboretum in Boston and $0.12/square foot for Prospect Park in the Borough of Brooklyn, New York. The Maintenance and Management Plan for the Muddy River Parks of the Emerald Necklace established a need of $0.10/square foot.

This analysis assumes an average desired standard of at least $0.06/square foot for CHR which is a high expectation based on current maintenance. If the site is approximately a total of 120 acres and the water body is approximately 84 acres the area to be maintained including the water's edge would be approximately 36 acres. For the purpose of this exercise we are rounding this to 40 acres of park land to maintain. The estimated maintenance operating budget to support Chestnut Hill Reservation could therefore range within the following:

Maintenance cost at 0.04 $ / s.f. = 0.04 x 40.0 acres x 43,560 square feet per acre = $ 69,696.00
Maintenance cost at 0.06 $ / s.f. = 0.06 x 40.0 acres x 43,560 square feet per acre = $ 104,544.00
Maintenance cost at $0.08 / s.f. = 0.08 x 40.0 acres x 43,560 square feet per acre = $ 139,392.00

Performance Standards

The following maintenance categories will help to define the tasks required to maintain Chestnut Hill Reservation:

1. **General Maintenance** – work related to appearance of the park and sanitary conditions including litter pickup and trash collection from receptacles;
2. **Horticultural Care** - work related to care of shrubs, perennials, small trees, turf care, mowing, pruning, woodland management, and tree care;

3. **Repair and Preservation** – work related to functioning and safety of park equipment and facilities, preventative maintenance, and repair including that of park lighting, repair of walls and fence, benches, park structures, and graffiti removal; and
4. **Water Body Management** – work related to maintaining park water bodies including monitoring, cleaning, edge repair, and removal of invasive species.

In addition, strategies need to continue or need to be developed to increase maintenance capacity through a combination of the following:

- Improved management;
- Increased staff productivity;
- Increased staff strength;
- Reduction of non-productive time; and
- Possible use of contracted services.

In his book, *Municipal Benchmarks: Assessing Local Performance and Establishing Community Standards*, David N. Ammons states that very limited information exists regarding labor ratios for park maintenance activities. Ammons also indicated that a report "prepared by a management analysis team in Pasadena, California, concluded that a ratio of one park maintenance employee for every 7-10 acres should produce 'A-Level' service—in other words, 'a high-frequency maintenance service'."[1] However, he points out that "standards of the maintenance-employee-per-park-acreage variety and corresponding statistics reported by individual cities, are complicated by the question of developed versus undeveloped park acreage and therefore should be interpreted cautiously." Among ten cities he examined, ratios of 10.6 to 84.7 acres maintained per maintenance employee were reported. He suggests that the following labor ratio guidelines devised by the NRPA may be useful to the DCR in deciding on its own standards, procedures, and resource requirements.

Table 4.21: Labor Ratios for Selected Parks and Recreation Maintenance Activities

Task		Labor Hours
Mowing 1 Acre, Flat Medium Terrain at Medium Speed		
	20" walking	2.8 per acre
	24" walking	2.2 per acre
	30" riding	2.0 per acre
	72" (6-foot) riding	0.35 per acre
	Bush hog	0.5 per acre
Trim		
	Gas powered (weed eater)	1.0 per 1,000 linear ft.
Planting Grass		
	Cut and plant sod by hand (1.5' strips)	1.0 per 1,000 sq. ft.
	Cut and plant sprigs by hand (not watered)	10.9 per 1,000 linear ft.
	Seed, by hand	0.5 per 1,000 sq. ft.
	Over seeding, Reconditioning	0.8 per acre
Fertilize Turf		
	24": sifter spreader	0.16 per 1,000 sq. ft.

[1] City of Pasadena [CA], Management Audit Team, 1986, p. 9.4

	Hand push spreader 36”	2.96 per acre
	Tractor towed spreader 12”	0.43 per acre
	Weed Control	
	Spraying herbicide w/fence line truck, tank sprayer 2 ft. wide (1” either side of fence)	0.45 per 1,000 sq. ft.
Leaf Removal		
	Hand rake leaves	0.42 per 1,000 sq. ft.
	Vacuum 30”	0.08 per 1,000 sq. ft.
Tree Removal		
	Street tree removal	13.0 per tree
	Street tree stump removal	3.5 per tree
	Park tree removal	5.0 per tree
	Park tree stump removal	2.0 per tree

Source: *Municipal Benchmarks: Assessing Local Performance and Establishing Community Standards*, David N. Ammons

Higher Maintenance Standards

In these performance standards, maintenance activities have been generally classified under Levels I, II, and III depending on intensity and frequency of work with Level I maintained at a high level of care while Level III is maintained in a more natural state. The activities have been categorized into landscape features, general features, trash removal, and graffiti removal. In these performance standards control and maintenance of invasive species has not been classified under levels.

Landscape Features

Turf Maintenance:

Without mowing, most turf grasses will grow to heights of 2’ to 3’ feet. Limiting turf to 2” to 2 ½” puts tremendous stresses on the plant and increases the level of necessary inputs, especially watering. Turf that is cut higher (3”-4”) is better able to withstand the pressures of foot traffic, equipment traffic and drought. Proper mowing practices and equipment minimize this stress. Grass clippings are to be left on all turf areas. This practice will decrease fertilizer requirements, increase the health of the turf’s root system, and eliminate the need for disposal or composting of grass clippings. All turf areas should be aerated at least twice each year.

The soil in the landscape is the most important natural resource in the park as it sustains all plant life, including trees, shrubs and especially turf grass. Soil tests need to be done in selected areas on an annual basis. Without the information from a soil test, all management decisions regarding the soil result in guesswork. Soil tests should be conducted in early spring (March). Soil pH for turf should be between 6.0-6.5. Base saturation for potassium (K) should be 2-4%; magnesium (Mg) should be approximately 14%; and calcium (Ca) should be 60-70%.

The equipment is an integral part of turf maintenance and must be maintained on a regular basis. It should be lubricated, with blades sharpened to ensure clean cut and reduce wear and tear on the engine. The desired output related to various equipment is as follows:

580D Groundsmaster	20sec / 1000 s.f.
Tractor & Flail	1.2min / 1000 s.f.
Gravely / Hydromower	6.0min / 1000 s.f.

Lawnmower	9.0min / 1000 s.f.
Line Trimmer	20.0min / 1000 s.f.
Tractor w/aerator or spreader attachment	1.0min / 1000 s.f.
Walk behind aerator or spreader	6.0min / 1000 s.f.

The following are the common levels of turf maintenance for public parks. The Turf Level I does not currently exist at Chestnut Hill Reservoir and probably will not in the future, but it is incorporated herein just to show the highest level.

1) Turf Level I: Mowed to height of 3" every 5-7 working days. Annually, the turf is evaluated for restoration, aeration, overseeding, disease, and fertilizer treatment. Soil tests in selected areas are performed annually and mineral soil amendments (Limestone, potassium fertilizer, etc.) should be applied if necessary in accordance with soil testing results. Before lime applications are made, the soil should be aerated. Nitrogen application of 1lb. /1000 square feet should be made as necessary in the spring (late April). Phosphorous fertilizers should not be applied near water surfaces. Phosphorous-containing fertilizers contribute to eutrification of water and the growth of aquatic weeds. Turf restoration (overseeding) is carried out with a slice-seeder, during the months of late August through September if necessary. When turf is restored, a snow fence is erected to protect the grass. The performance standard is set at less than 2% trash visible with a 0% trash tolerance goal.

2) Turf Level II: Mowed to height of 4" every 7-12 working days. The soil is tested and lawn areas are fertilized as required by testing results and some weeds and bare spots are acceptable, but routinely corrected. Less than 5% trash with 0% trash tolerance goal.

3) Turf Level III: Mowed to height of 4.5" every 14-18 working days. This turf requires no fertilizer, no irrigation, occasional repair, some weeds are tolerated, and it can be allowed to wear out and grow through rest cycles. Less than 5% trash with 0% trash tolerance goal.

General Weed Control for Turf:
Weed control can be applied at curb lines, fence lines, clearance along steps, cracks/ crevices, around trees, mulched planting beds, and public health hazard areas (Poison Ivy infested areas). This does not apply to the water's edge. It can be done either mechanically using sprayers, line trimmers, and other turf maintenance equipment or manually by hand weeding, by weed wacker, ice scrapper, flat tree spade shovel, etc. All pesticide application must be performed under Massachusetts Pesticide Control Act of 1978; all chemicals shall be approved by MWRA and the Conservation Commission and applications must be documented. The desired output with regard to equipment and personnel is as follows:

Spray with small sprayer	40min / 1000 s.f.
Spray with truck sprayer	14min / 1000 s.f.
Trim with line trimmer	20min /1000 s.f.
Weed (manually)	60min / 1000 s.f.

Shrub Planting Area Maintenance:
Shrubs provide numerous functions and are a vital part of the park landscape. When properly selected and maintained, they serve as focal points, accents, help control circulation, and provide an aesthetic appearance, complimenting and enhancing the surrounding park landscape.

The annual maintenance program for new and established plants depends on the type of plant material and the skill levels of the personnel responsible for the work. No shearing of shrubs should occur within Chestnut Hill Reservation. Hand pruning is always preferred in order to maintain the natural character of the plant species.

1) Planting Areas Level I: Less than 10% weeds and 5% deadwood in bed. At CHR this would include shrub beds in the area of the rink. They will have a manicured appearance reflecting the nature of the space. The shrub species will be kept pruned on a regular basis, deadwood will be removed, and in general the maintenance will be of a high level. Shrub beds and small trees are edged and mulched each spring. Shrub beds are maintained and weeded monthly and invasive species will be removed and controlled monthly. Shrub beds and small trees are watered as required. Trash removal completed minimum of once per week. Leaf removal is completed in fall and spring.

2) Planting Area Level II: Less than 10% weeds and 10% deadwood in bed. At CHR this would include shrub beds in the area of the gateways. This includes shrub beds with plants that have a more bushy irregular appearance in keeping with their surroundings and a much lower level of maintenance. These shrubs look reasonable if kept untrimmed. Shrub beds and small trees are edged and mulched each spring. Shrub beds are maintained and weeded and invasive species removed or controlled in late spring and early fall. Shrub beds and small trees are watered as required. Trash removal is completed bi-weekly. Leaf removal is completed in fall and spring.

3) Planting Area Level III: Less than 10% invasive species. These areas typically abut woodland areas and are naturalistic areas that serve to provide an understory, a visual screen or buffer between intensively used areas and wildlife habitat. Use is typically low level and informal. The shrubs are allowed to achieve their natural form. The shrubs will rarely be pruned and species will be chosen that will flourish in the particular site and light conditions and will grow to the desired height without any pruning or shaping. Invasive species will be monitored and removed or controlled two times per year. Trash removal is completed spring and fall. There is no leaf removal.

Trees/Woodland Maintenance:
Implementation of regular trees in grass and a woodland tree maintenance program that will preserve the health and structural integrity of park trees is included in this task. All trees will be inspected seasonally and treated according to the integrated pest management requirements. More than any other landscape element, trees provide the most prominent visual component in the landscape. Tree preservation and management involves the protection of the canopy, trunk and roots. Trees in public parks are subject to intensive visitor use. Over time this use can have severe impacts with ongoing public use including the following impacts:

- Compaction and lack of soil fertility begins to change the soil both physically and chemically.
- Rainwater begins to runoff (causing soil erosion) rather than percolating down through the soil and to the plants' roots.
- Groundcover materials such as turf or understory are lost or damaged.
- Exotic invasive species begin to seed in the woodlands (such as Ailanthus, Rhamnus, Norway Maple, Malus app., Euonymus, Berberis, Celastrus, and Ampelopsis) and the character of the woodland begins to deteriorate. Native invasive species such as Black Cherry and Black Locust also seed.
- Native shrubs and native understory trees are lost to invasives and overuse of the areas.
- Older native trees cannot compete for nutrients and water and begin to decline; tops die back.
- Areas become so impacted that users begin to seek other locations.

The Park Manager must be vigilant to spot these trends early and initiate corrective practices such as liming, fertilization, corrective pruning and keeping mulched walking paths well mulched with composted wood chips. The removal of exotic invasive species is an intensive recurring task. Smaller plants can be hand pulled. However, the most effective strategy for eradication is cutting and spraying the freshly cut stump with a small quantity of triclopyr. All chemicals need to be pre-approved and applications must be documented. Brush should be chipped and blown into the forest if possible, or in turf areas. Wood chips should be composted in another location. Age diversity in the canopy layer is a long-term goal. Ideally the trees should be of all ages with every stage present from newly established plants to past maturity.

1) Tree Maintenance Level I: Less than 5% invasive species and less than 5% deadwood. These areas are characterized by grass under trees on gently rolling topography. It is a pleasant open area for sitting in, picnicking on grass or just walking through. The nature of the topography is critical as the grass must be capable of being mown 3-4 times annually. Walking paths through the long grass can be cut shorter and more often. The actual frequency of mowing depends on the density of the tree canopy and park setting. Trees are inspected and pruned as necessary for health and safety biannually, and thinned out every five years. Trash is collected weekly.

2) Woodland Level II: Less than 10% invasive species and less than 10% deadwood. These areas are characterized by understory shrubs and seedlings of trees under major tree canopy. These areas are natural areas and serve to provide a visual screen or buffer to more intensively used areas and habitat for wildlife. Use is typically low and informal. They require a low level of maintenance, but a high level of skill for management and implementation to work. The objective in the woodland areas is to sustain a continuous tree cover with the area being regenerated naturally. Both the canopy and understory will be managed on a 10-year cycle. Natural regeneration may, on occasion, be enriched by planting if the desired species do not regenerate naturally. Trees are safety pruned every five years; hazard trees are removed as required and invasive species both exotic and native are removed or controlled. Trash pickup will be monthly.

Maintenance Recommendations for the Control of Invasive Species:

The goal of the Resource Management Plan (RMP) is threefold, to maintain pedestrian access to the Reservation where people can experience the natural setting, to develop maintenance recommendations to control invasive species, and to propose native plantings that provide enhanced wildlife habitat. In order to meet this goal, the objectives of the RMP are to enhance and expand native species in appropriate locations, remove and prevent the dissemination of invasive species, and propose that plantings that maintain a desirable vegetative community comprised of diverse species be developed. The RMP proposes resource management recommendations to provide for the long-term maintenance of vegetation within the site, provide landscape continuity with the existing historic features within the Reservation, and enhance wildlife habitat. Maintenance of these resources will also be contingent upon proposed activities as they are developed for the site.

Development of a long-term, comprehensive natural resource plan for maintenance is essential to enhance the aesthetic value, visitor use, and appreciation of the site. This RMP focuses on invasive plant species management and maintenance, as well as, management of nuisance wildlife issues within the site. Virtually every habitat within the Reservation contains one or more invasive plant species, including

Oriental Bittersweet (*Celastrus orbiculatus*), Black Locust (*Robinia pseudoacacia*), Norway Maple (*Acer platanoides*) European Buckthorn (*Rhamnus frangula*), Multiflora Rose (*Rosa multiflora*), Purple Loosestrife (*Lythrum salicaria*), and Garlic Mustard (*Alliaria officinalis*). Poison Ivy, although not considered an invasive species by the Massachusetts Department of Agriculture, presents a maintenance challenge within the site as it occurs as a low-growing groundcover and as a climbing vine that winds around trees and shrubs within the upland portions of the site.

A brief description of the maintenance options, biological, manual, and/or chemical are outlined below. As with all maintenance, the control efforts must balance improvement of the natural community with the disruption caused by the management. In all recommendations, the RMP assumes it is always best to take the least damaging approach that will affect the desired control of an exotic.

As part of the control of exotic species a follow-up of native species plantings should be installed throughout the site in order to provide a vegetated buffer. In the future it will be necessary to develop a comprehensive planting plan that includes native trees, shrubs, and groundcover species that will flourish to provide a vegetative buffer that can help control exotic invasion, as well as, provide more desirable aesthetic viewsheds and enhanced wildlife habitat.

<u>Oriental Bittersweet (*Celastrus obiculatus*)</u>

Oriental bittersweet was observed entwined amongst the upland mature and sapling trees throughout the site. The removal of Oriental bittersweet is best accomplished by manual cutting and removal of these persistent vines. A

moderate amount of Oriental bittersweet was observed within the upland trees and saplings located in the northeastern corner of the Reservation.

Black Locust (*Robinia pseudoacacia*)
Scattered black locust saplings were observed within the successional shrub habitat. Biological control agents are not available to check the invasion of Black Locust. Manual cutting or removal of the trees alone is also not an effective maintenance option. In order to effectively discourage the growth and dispersion of Black Locust, a combination of manual cutting and removal combined with a comprehensive chemical treatment of the stumps and shoots is the most effective means of maintaining this invasive species. A direct application of glyphosate solution applied to stumps cut near the ground is typically recommended.

Norway Maple (*Acer platanoides*)
Scattered Norway Maple was observed on the drumlin hill and particularly within the lawn area located between Chestnut Hill Driveway and the residential apartment buildings.

Biological control agents are not available to check the invasion of Norway Maple. Manual cutting or removal of the trees alone is also not an effective maintenance option. In order to effectively discourage the growth and dispersion of Norway Maple, a combination of manual cutting and removal combined with a comprehensive chemical treatment of the stumps and shoots is the most effective means of maintaining this invasive species. A direct application of glyphosate solution applied to stumps cut near the ground is typically recommended.

One alternative to manual removal of mature Norway Maple is to leave the trees in place and discontinue any further planting of this invasive species. According to the Massachusetts Department of Agriculture (DoA), Invasive Plants Association of New England (IPANE), a two-step phase out of Norway Maple is planned for the state of Massachusetts. Specifically, the importation of Norway Maple is banned by the DoA beginning January 1, 2006 and in-state nurseries will be prohibited in from selling and distributing this invasive species on January 1, 2009.

European Buckthorn (*Rhamnus frangula*)
Clusters of European Buckthorn were frequently observed along the embankment to the Reservoir and within the forested upland habitats, with scattered individuals observed within the successional shrub habitat.

No effective biological controls of European Buckthorn that are feasible are known at this time. Accordingly, eradication of European Buckthorn is best accomplished through a combination of manual removal and herbicide application. Herbicide treatments are available to aid in the defoliation of this invasive species as part of a long-term maintenance plan. Treatment includes application of herbicides, such as Garlon, which is a selective herbicide that can be applied on cut European Buckthorn stumps. Application of herbicides should be made within a few hours of cutting and are best applied during the dormant season, as this reduces the potential for the herbicide to drift onto non-target plants. Because plants that appear to have been killed can resprout even several years after treatment with herbicide, annual monitoring should be conducted and follow-up treatments made as needed. The RMP recommends a combination of manual removal of European Buckthorn shrubs and seedlings with a follow up application of herbicides.

Multiflora Rose (*Rosa multiflora*)
Multiflora Rose within the site is relegated to the drumlin hill within the northeastern corner of the property. No effective biological controls that prohibit multiflora rose growth are known at this time. Rose rosette disease is a sometimes fatal viral disease that attacks Multiflora Rose; however, this disease is not considered an effective biological control because it may infect other rose species, as well as apple trees, plum trees, and some types of berries.

The spread of Multiflora Rose can be hindered by repeated cutting during the growing season. All stems should be cut, and new stems that appear should also be removed in the same growing season. This treatment will most likely need to be repeated for several years to achieve adequate control. To supplement the repeated cutting technique, a combination of manual removal followed by herbicide application is generally recommended. Painting the herbicide on the cut stump with a sponge applicator kills root systems and discourages the plant from resprouting. Glyphosate has been effective in

controlling Multiflora Rose when applied directly to the cut stump. With this technique, herbicide is applied specifically to the target plant, reducing the possibilities of damaging nearby, desirable vegetation. Chemical application to cut stumps is best accomplished during the dormant season. Application in the dormant season is preferred because it will minimize potential harm to non-target species. Because plants that appear to have been killed can resprout even several years after treatment with herbicide, annual monitoring should be conducted and follow-up treatments made as needed.

Purple Loosestrife (*Lythrum salicaria*)

Purple Loosestrife is one of the dominant plants vegetating the banks of the Reservoir. Manual removal and chemical applications of herbicide to control Purple Loosestrife is generally considered an ineffective means of removal given the prolific seed production and extent of the root system and the plants associated ability to flourish and germinate. This invasive species produces copious amounts of seeds, up to 250,000 seeds per plant annually, and possesses a strong taproot that continues to provide food to the plant when it is mowed, sprayed with herbicides, or damaged by insects. Accordingly, LEC has investigated the biological control of Purple Loosestrife through literature review and first hand experience documenting the effectiveness of releasing *Galerucella* beetles to eradicate this plant species.

Galerucella beetles, a species that targets Purple Loosestrife and feeds on the leaves, shoots, and stems to defoliate these invasive plants. Though an exotic species themselves, the use of *Galerucella* spp. as a biological control for *L. salicaria* has proven effective, with a success rate of up to 90% in other areas of North America without visible environmental repercussions (Blossey, 2001, Blossey and Schroeder 1995). The United States Department of Agriculture–Animal Plant Health Inspection Service has approved the release of *Galerucella* for *L. salicaria* control and the beetles have been released in over 30 states. Additionally, the Minnesota, Michigan, and Wisconsin Departments of Natural Resources have been releasing the beetles since 1994 to manage *L. salicaria* (Blossey, 1997) and Massachusetts has been them using them effectively since 2000.

Adults inflict a shothole feeding pattern eating small (1-2 mm) holes through foliage. Adult and larval feeding upon the buds results in stunted plants and reduced seed production. Larval damage to flower and shoot buds reduces plant growth and inhibits flowering. Adult and larval leaf damage greatly reduces the photosynthetic capability of *L. salicaria*, possibly leading to reduced starch stores in the roots which can result in winter plant mortality. Photosynthetic inhibition results in reduced stem height and root length, both essential to overall plant vigor. With heavy defoliation, the host plant becomes skeletonized and turns brown. Heavily defoliated plants may die or produce fewer shoots the following year. The resultant weakening and/or death of the loosestrife plants provide an opportunity for previously out-competed native plant species to return.

Garlic Mustard (*Alliaria officinalis*)

Scattered patches of Garlic Mustard were observed throughout the forested portions of the property. Garlic Mustard spreads from established patches of infestation along an invasion front. Satellite infestations occur when seeds are transported by wind or wildlife into new areas, most often along trails, roads or forest edges. Top priority should be given to annual removal of all satellite infestations to prevent further spread.

Biological control of garlic mustard is being explored by a consortium coordinated through Cornell University numerous state and federal partners. To date, an effective biological control agent that feeds exclusively on Garlic Mustard has not been identified. Accordingly, LEC has prepared recommendations based on the size of the infestation (local) and associated ease of removal. Removing individual garlic mustard plants manually is the simplest and most cost effective approach to maintaining small or isolated infestations. When pulling plants, it is important to remove the stem as well as the entire root system, since buds located within the root crown can produce additional stems. All pulled plants should be removed from the site as seed ripening continues even after plants are pulled. Repeated hand pulling of garlic mustard is reported to be effective for control in small areas, but has limitations and is labor intensive. Specifically, seeds remain viable in the soil for up to five years so it is necessary to remove all Garlic Mustard in an area every year until the seed bank is exhausted and seedlings no longer appear. This will require multiple efforts each year as rosettes can continue to bolt and produce flowers over an extended period (April-June). Accordingly, manual Garlic Mustard removal should be part of the long-term maintenance.

Poison Ivy (*Toxicodendron radicans*)
During the inventory phase Poison Ivy was an observed groundcover species around the perimeter of the Reservoir along with climbing vines within the upland portions of the site.
Since Poison Ivy is not a listed invasive species, a feasible option is to leave the plants undisturbed and post signage warning visitors of Poison Ivy exposure. Poison ivy is a native species to New England and therefore its natural control agents are already present. Consequently, biological control is not an option for the control of Poison Ivy. Burning this invasive species to remove it from an area is never recommended for the control of poison ivy, as it creates a serious health hazard and does not effectively reduce infestations). Due to the prevalence of Poison Ivy within the site combined with the public hazards it presents, control of this species is likely best accomplished with the complete manual removal of the plant followed by periodic chemical applications and monitoring.

In order to effectively eradicate Poison Ivy utilizing the manual removal method, the entire plant must be removed. When the soil is wet, the roots should be dug up and removed completely from the soil as any root sections left will sprout. Manually removing the roots and stems will diminish the ability of the plant to produce shoots will be minimized. Repeated cultivation will eventually eliminate Poison Ivy because the plant does not regenerate easily from plant fragments. Climbing vines of Poison Ivy, like those found within the upland sections of the site, can be cut and pulled from the trees, fence posts, and other structures. Manual removal of Poison Ivy should is best accomplished in the winter when the plants are dormant. Poison Ivy clippings and roots should be transported from the site and disposed of properly.

Another option available to remove poison ivy includes chemical application of herbicides, including glyphosate. Leaves can be selectively painted with the solution using a disposable brush or cotton rag and spot treatment will minimize the chance of the herbicide drifting onto adjacent, desirable vegetation. Repeated applications of herbicide may be necessary. It is important to note that glyphosate is a nonselective compound and will damage or kill other vegetation it contacts.

General Features

Structures:

All buildings and structures should be inspected and their condition recorded annually. New work necessary because of changes in use should meet the state building code. Alterations for accessibility should be carefully designed. Work required to stabilize the structures, prevent vandalism, and prevent insect or animal damage should be considered a high priority and implemented immediately.

All structures are assumed to be Level I; however the particular problem or situation may necessitate a specific response. Small, routine in-house repairs are done within 3-5 working days. Contracted repairs are assessed within 3-5 working days. Annual maintenance is done yearly. The Standards pertain to structures of all materials, construction types and sizes. Standards for Preservation:

- The existing condition of structures will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature of a structure, the new material will match the old in composition, design, color, and texture.
- Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to existing materials will not be used.

Furnishings:

Maintenance of park site furnishings includes:

- Benches - repair, replacement, painting.
- Trash cans - emptying, repair, replacement.

- Bicycle racks – repair, replacement.
- Lighting - repair, replacement.
- Drinking fountains - cleaning, repair, seasonal turn on in spring and winterization in fall.
- Signage – repair, replacement.
- Graffiti removal – as required.

Regular maintenance of the park's site furnishings is an important task, which is often overlooked or only done on an emergency basis. Keeping park furnishings in good repair makes for a more inviting and usable park. The furnishings should be inspected weekly and routine repairs done within 3-5 working days.

DCR should consider standardized furnishing, which will reinforce the signature character of the park while adding visual continuity of green space. In addition, maintenance is easier if there is one bench style. Repairs are more likely to be done with "available materials" or not done at all when too many options exist.

Paths and Paved Surfaces:

1) Paved Surfaces Level I: Less than 2% in degraded condition. Paths should be cleaned when there is a noticeable accumulation of debris. Leaf pick-up will be weekly in fall season and in early spring.

2) Paved Surfaces Level II: Less than 5% degraded condition. Paths should be cleaned when there is a noticeable accumulation of debris. Leaf pick-up will be bi-weekly in fall season and in early spring.

3) Path Maintenance Level III: More than 5% degraded condition. Repair stonedust and asphalt paths, including minor repairs, grading and potholing as necessary. Leaf pick-up will be once in fall season and once in early spring.

Trash Removal
The park system should be clean and free from trash and litter. Trash receptacles should not be overflowing and litter should be kept to a minimum. Maintenance affects appearance of the park and sanitary conditions, including litter pick-up and collection of trash from receptacles.

1) Trash Removal Level I: Zero overflowing cans; minimum servicing of once a day 7 days/week. To maintain no overflowing cans it may require more than one servicing/day and event or special use may dictate more frequent cleaning.

2) Trash Removal Level II: Zero overflowing cans; minimum servicing of once a day 5 days/week. Event or special use may dictate more frequent cleaning. Event or special use may dictate more frequent cleaning.

3) Trash Removal Level III: Zero overflowing cans; minimum servicing of 2 to3 times/week. Litter barrels should be emptied up to 3 times per week from April through October and weekly during the winter. Event or special use may dictate more frequent cleaning.

Graffiti Removal
Maintenance standards for graffiti removal are followed unless graffiti involves an historic structure that requires historic preservation notice or authorization.

1) Graffiti Removal Level I: Graffiti removed within 24 hours.

2) Graffiti Removal Level II: Graffiti removed within 48 hours.